

THE EFFECTS OF ONLINE DISCUSSION FORUM AGGRESSIVE MESSAGES AND COGNITIVE DISTORTION ON USERS' NEGATIVE AFFECT AND AGGRESSION

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ABSTRACT

This research is comprised of two studies designed to explore the effects of online discussion forum aggressive messages and Internet cognitive distortion on users' negative affect and aggression. The results of study 1 revealed 69 users could perceive both disgust and hostility feelings toward aggressive messages conducted by the authors, and classify them into three levels: direct aggression, indirect aggression, and disagreement. Study 2 focused on whether three aggressive messages and Internet cognitive distortion had effects on users' negative affect and online aggression. 359 users read one of messages conducted in study 1, and then finished online questionnaires. The results indicated that there were no significant differences in aggression across interaction between aggressive messages and cognitive distortion. However, in users with high cognitive distortion there was significant reported higher aggression than users with low cognitive distortion. Though users could classify the aggressive level of messages and their negative affect be aroused during the treatment, their aggression was not evoked after reading aggressive messages. High cognitive distortion users' aggression and negative affect were triggered without reading aggressive messages.

Keywords: aggression, cognitive distortion, computer mediated communication (CMC), online discussion forum, bulletin board system

INTRODUCTION

In the information era, more and more people communicate via online channels (Lin, Liu, & Yuan, 2001; Liu & Chang, 2007; Liu & Ko, 2007; Liu & Lin, 2010). People read information shared by others and in turn post their opinions in the online discussion forum (Liu, 2007). Educators have also developed online courses with online discussion forums based on Computer mediated communication (CMC) theory, and provided their empirical utility and educational implication (e.g., Hou, 2010; Liu, 2007; Yukselturk, 2010). However, Hou (2010) indicated that students often lack in-depth analysis processes and result in inappropriate inferences and discussions in online discussion forum in a sample of Taiwanese college students. The intense arguments (a long and hot thread of articles) on the online discussion forum tend to become online conflict. Previous researchers (e.g., Garbasz, 1996; Liu, Ho, & Song, 2011; Thompen, & Foulger, 1996) regard verbal aggression or hostile verbal behavior as a form of online aggression. When people use verbal aggression to attack others directly or indirectly, the verbal aggression message posted on the online discussion forum may arouse a negative affect (e.g. anger) and online verbal aggression (Johnson, Cooper, & Chin, 2009). The disagreement message posted by different groups may easily arouse Internet users' negative affect and online verbal aggression (Johnson, Cooper, & Chin, 2009). Analyzing six Taiwan online discussion forums, and collecting verbal aggression threads/messages, Ni (2003) found that the average time lasted sixty-five hours, and the intense level of verbal aggression scored 4.38 points (above the midpoint 4). However, as far as we know, few studies had attempted to examine empirically whether reading online verbal aggression messages may evoke users' psychological arousal (e.g., positive or negative affect and online aggression).

A previous study (Lin & Hwang, 2005) examined Internet use and Internet hostility with the structural equation modeling technique and found that Internet cognitive distortion had effects on Internet aggression. To extend the

results, the current research conducted two studies to explore whether after Internet users with different levels of Internet cognitive distortion read different online aggressive messages, their negative affect and online aggression would be aroused. Studies related to aggression, cognitive distortions and negative affect are described in the following section.

RELATED STUDIES

Aggression

Webster's Ninth Collegiate Dictionary (1989) defines aggression "as a forceful action or procedure," and the Google Online Dictionary (searched at March, 2010, <http://www.google.com.tw/dictionary?hl=zh-TW>) defines aggression as "feelings of anger and hatred that may result in threatening or violent behavior." Berkowitz (1993) describes aggression as any behavior intended to injure someone physically or psychologically. Aggression is expressed in many forms, some of which are physical and some not. For instance, Berkowitz (1993) and Buss (1961) classify aggression into active and passive aggression. Bjorkqvist, Lagerspetz, and Kaukiainen (1992) classified the aggression into three types: direct physical (e.g., hits and kicks, etc.), direct verbal (e.g., yells and calling the other names, etc.), and indirect (a kind of social manipulation; e.g., gossips and planning secretly to bother the other). Thompsen and Fouler (1996) and Turnage (2007) propose dimensions of online aggression messages, such as divergence, disagreement, tension, antagonism, profane antagonism, intimidation, insults, offensive language or tone, and unfriendliness.

Internet Cognitive Distortions

Cognitive behavior theorists believe that individuals in frustrated and anger-provoking situations tend to use maladaptive information processes such as cognitive distortions and hostility attribution bias, both of which usually result in increasing levels of aggressive behavior (Crick & Dodge, 1994). Along with Berkowitz (1993), Crick and Dodge (1994) note that cognitive distortions increase people's aggressive behaviors and encourage them to rationalize their negative cognitive thinking. Ten examples of cognitive distortions are all-or-nothing thinking, overgeneralization, selective abstraction, disqualifying the positive, mind-reading as fortune-telling, magnification or minimization, reasoning from how we feel, should and shouldn't, labeling, and personalization (Mass, 1997). Barriga and Gibbs (1996) identify four kinds of cognitive distortions that are directly related to aggressive behaviors, including self-centeredness, mislabeling, assuming the worst, and blaming others. Lin and Hwang (2005) found Internet cognitive distortions had impacts on Internet aggression in a sample of Taiwanese university Internet users.

Negative Affect

Affect is an emotion or subjectively experienced feeling which is a mental state that arises spontaneously instead of through conscious effort and that are often accompanied by physiological changes (Ekman, 2003). Tomkins (1963) proposed nine affects with a low/high intensity level: positive (enjoyment/joy and interest/excitement), neutral (surprise/startle), and negative (anger/rage, disgust, dismal, distress/Anguish, fear/terror, and shame/humiliation). Researchers (e.g., Berkowitz, 1993; Huesmann, 1994) have approved the relationship between aggression and negative affect. Huesmann (1994) found negative affect usually causes angry feelings and aggressive inclination and also tends to arouse hostile feelings and memories to mind. Baron and Bell (1976) found an inverted U curvilinear relationship between negative affect and aggression. That is, moderate degree of negative affect increases aggression, but more extreme of discomfort actually reduces aggression. In terms of expressing emotions on CMC, Derks et al. (2007) assumed that it was different from face-to-face communication for two reasons. First, because CMC was slower and less spontaneous, as all other information exchange had to be typed, and second, because an important aspect, the nonverbal part, of the emotional information was not available. Although expressing emotions on the Internet is not as direct as face-to-face communication, we believe users' affect may still be aroused by some online activities. Johnson, Cooper, and Chin (2009), examining online verbal aggression messages and 148 undergraduate students' anger in a laboratory, found that the behavior of students posted online verbal aggression messages was associated with anger directed toward the negotiating context and negotiator's partners.

OVERVIEW CURRENT RESEARCH

The authors conducted two studies to examine whether online aggressive messages would arouse users' aggression and negative affect. Study1 aimed at testing whether online discussion forum users reading three aggressive messages written by authors posted on campus online discussion forum could rate them as different levels of aggression and disgust. Study 2 aimed at examining online forum users' negative affect before and after reading online aggressive messages in study 2.

Study 1

The purpose of study was to examine whether online discussion forum users reading aggressive messages posted

on campus discussion forum rated them as various disgust and hostile levels. We also supposed that aggressive messages conducted by the researchers be classified into three levels: direct aggression, indirect aggression, and disagreement.

Questionnaires

The authors conducted three aggressive messages based on the aggression theory (Björkqvist, Osterman, & Lagerspetz, 1992; Thompson & Foulmer, 1996). The authors used the scenario which frequently appeared on the college campus and caused great impacts on students: the argument of pro or con of protecting stray dogs on the campus. The operative definition and sentences used in three levels of aggressive messages were described as following.

The direct aggressive messages were compiled to show users attacking each others, exchanging insults, insults, opinions showing over-confidence, and messages indicating that the original topic or cause of a specific dispute had been set aside or forgotten. The exemplar sentences were "Damn it, I am going to beat up those who protect stray dogs," "Dogs are barking...When the dogs are barking all night where are shitty stupid dog savers now? Which hell are they in?"

The indirect aggressive messages were to look down on others, teases, expressed sarcasm and used cutting sentences. The messages consisted of "Your magnificent do-gooder kindness is getting on my nerves." "Do you think you are Buddha, Mr. Savior?"

Disagreement messages expressed opposing opinions but also offered evidence in support of individual views with no overtly aggressive opinions. The messages consisted of "The dormitory rules state that pets are not allowed. Did someone give you special permission to keep so many pets?" and "When taking care of the dogs' health and diet, please think about our sanitation and well-being."

Participants and Procedure

Sixty-nine (53 male and 16 Female) online discussion forum users (college students) were recruited from a campus online discussion forum in a Taiwan college. At the beginning of procedure, they were induced to involve in the argument of pro or con of protecting stray dogs on the campus. Then, they were allocated randomly to read one of the three flaming messages. After reading the messages, they were asked to appraise the hostility and disgust level toward messages per se (both from 1 to 7). At the end of the procedure, they were thanked for their participation and received a NT\$100 coupon to a chain convenient store. The direct aggression messages were read by 31 users, the indirect aggression messages were read by 13 users and the disagreement messages were read by 25 users.

Result

The results of descriptive statistics (Table 1) indicated the hostility scores of three aggressive messages all exceeded the midpoints (4.0), from 4.68 to 5.87. Users reading the direct aggression message reported the highest hostility scores (5.87) among three messages. However, the reported disgust means were lower than the midpoint (4.0) of a 7-point scale, from 2.68 to 3.80. Users reading direct aggression message reported the highest disgust scores (3.80) among three messages.

Table1. Descriptive statistics and ANOVA results for hostility and disgust scores of messages

Variables	Messages	N	Mean	SD	F	Post hoc
Hostility	Direct aggression	31	5.87	1.60	4.11*	Direct> Disagreement
	Indirect aggression	13	4.76	1.92		
	Disagreement	25	4.68	1.62		
	Sum	69	5.23	1.75		
Disgust	Direct	31	3.80	1.74	3.31*	Direct> Disagreement
	Indirect	13	3.31	1.93		
	Disagreement	25	2.68	1.28		
	Sum	69	3.30	1.68		

*p<.05

The results of ANOVA analysis revealed that there were significant differences in hostility scores (F=4.11, p<.05) and disgust scores (F=3.31, p<.05) across three aggressive messages. The post hoc comparison using Scheffé test indicated users reading direct aggression message (Mean=5.87, SD=1.60) reported significantly higher hostility scores than users reading disagreement message (Mean=4.68, SD=1.62). Users reading direct aggression message (Mean=3.80, SD=1.74) reported significantly higher disgust scores than users reading

disagreement message (Mean=2.68, SD=1.68) as well. There was a middle relationship ($r=0.49$, $p<.01$) between hostility (Mean=5.23, SD=1.75) and disgust scores (Mean=3.30, SD=1.68). The result showed that users' hostility and disgust was significantly correlated.

Although the reported disgust means of three messages were lower than the midpoint, the reported hostility means of three messages were higher than the midpoint. The relationship between hostility scores and disgust scores further yielded users' hostility and disgust feelings were aroused simultaneously. The result also indicated users could discriminate direct aggression message from disagreement message in hostility and disgust. That is, after users read messages (especially direct aggression message), their hostility and disgust feelings could be evoked. However, users' hostility and disgust feelings after reading indirect aggression message were similar to those reading direct aggression message and disagreement message. The results supported the messages written by the authors could be categorized by users into three levels: direct aggression, indirect aggression, and disagreement. Based on the results, the authors used three aggressive messages and online questionnaires to conduct Study 2.

Study 2

The purpose of the study was to examine whether three online discussion forum messages and Internet cognitive distortion influence users' negative affect and online aggression. The authors supposed that users with high levels of Internet cognitive distortion reported higher aggression after reading aggressive messages than users with low levels of Internet cognitive distortion. Users with high level Internet cognitive distortion would report higher negative affect after reading messages than those with low levels.

Participants and Procedure

359 online discussion forum users (college students) were recruited. Users were first asked to answer the online questionnaires of Internet cognitive distortion and affect. Then the system assigned randomly three messages to users to read. Users were bystanders of aggressive messages. After reading the message, they were asked to answer the scales of online aggression and affect.

Questionnaires

The online questionnaires consisted of several parts: affect, Internet cognitive distortion, online aggression, and three aggressive messages adopted from Study 1. The messages were posited on online discussion forum article interface. Other scales were validated by factor analyses using principle component method and varimax rotation.

The affect scale was revised from the scale by Levine, Wyer, and Schwarz (1994). The original purpose of the scale was to measure a person's emotion state by adjectives with responses given along a 5-point checklist. Analyzing the data from the 359 respondents, the scale consisted of 14 items, 2 factors: 1) negative emotion, 2) positive emotion, explaining 69.50% of the total variances. The reliability coefficients (Cronbach alpha) were .93 and .92 of two factors and .85 for the whole scale.

The scale of Internet cognitive distortion was revised from the scale "inventory of Hostility Cognitive Distortions (IHCD)" by Lin & Hwang (2005). The original purpose of the scale IHCD was to measure a person's mental state and process which were extreme self-central and dogmatic, radical, and to rationalize the negative cognitive thinking. The researchers operated it as the Internet cognitive distortion scale with responses given along a 4-point checklist. The scale consisted of 17 items, three factors: 1) negative thinking, 2) self-central, 3) blaming others, 4) mislabeling, and explaining 59.93% of the total variances. The reliability coefficients (Cronbach alpha) were from .73 to .77 of four factors and .87 for the whole scale. The results accorded with the IHCD as well.

The online aggression scale was modified from the scale "Internet Hostility Questionnaire (IHQ)" by Lin and Hwang (2005). The original purpose of the scale IHQ was to measure a person's online aggressive behaviors and hostility feelings with responses given along a 4-point checklist. The scale consisted of 25 items, six factors: 1) other internet aggressive means, 2) ignoring others' right, 3) expressing angry behaviors, 4) direct verbal aggression, 5) internet cynical, and 6) attacking by group force, explaining 67.77% of the total variances. Analyzing the 359 data, the reliability coefficients (Cronbach alpha) were from .76 to .93 of 6 factors and .86 for the whole scale. The results also corresponded to the IHQ.

Measurement

The experiment was between-subject factorial design. The subjects were divided into high and low cognitive distortion, based on their scores of inventory of Hostility Cognitive Distortions (IHCD) scale and the cut-off

point was the mean. Then they were assigned to read one of the three messages at random. Therefore, the subjects were assigned into six groups (see the Table 2).

Table2. The between subject factorial design in study 2

Messages	Internet cognitive distortion		Sum
	high	low	
Direct aggression	H1(N=86)	L1(N=59)	145
Indirect aggression	H2(N=60)	L2(N=52)	112
Disagreement	H3(N=63)	L3(N=39)	102
Sum	209	150	359

The first independent variable “aggressive messages” was composed of three levels, and the classification of these three levels was proofed valid in study 1. The second independent variable “Internet cognitive distortion” was between subjects, personality attribute, and divided into two groups: high/low based on their scores of inventory of Hostility Cognitive Distortions (IHCD) scale and the cut-off point was the mean. The third independent variable “timing” was within subjects, the affect scale were measured before and after reading the messages. The dependent variables were measurements of the negative affect and online aggression scale.

Result

The research group adopted three messages of study1 and online questionnaires to conduct the study. The descriptive statistics of variables presented on Table 3.

Table 3. The descriptive statistics of variables on negative affect and online aggression

Messages	Cognitive distortion	N	Affect pretest		Affect post-test		Aggression	
			Mean	SD	Mean	SD	Mean	SD
Direct aggression	High	86	2.75	0.53	2.88	0.49	2.26	0.24
	Low	59	2.64	0.75	2.72	0.71	1.92	0.32
	Sum	145	2.70	0.63	2.81	0.59	2.12	0.32
Indirect aggression	High	60	2.64	0.59	2.81	0.54	2.21	0.31
	Low	52	2.59	0.63	2.74	0.58	1.98	0.25
	Sum	112	2.61	0.60	2.77	0.56	2.10	0.31
Disagreement aggression	High	63	2.76	0.54	2.92	0.48	2.22	0.37
	Low	39	2.60	0.52	2.73	0.52	1.94	0.30
	Sum	102	2.70	0.53	2.85	0.50	2.11	0.36
	High	209	2.72	0.55	2.87	0.50	2.23	0.30
	Low	150	2.61	0.65	2.73	0.61	1.95	0.29
	Sum	359	2.67	0.59	2.81	0.56	2.11	0.33

The descriptive statistics of pretest negative affect (Mean=2.67, SD=0.59; 5-point scale), post test negative affect scores (Mean=2.81, SD=0.56; 5-point scale) and online aggression scores (Mean=2.11, SD=0.33; 4-point scale) did not exceeded the midpoints of the scales. The pretest negative affect total scores were from 2.60 to 2.75 (Mean=2.67, SD=0.59), and post-test negative affect total scores were from 2.72 to 2.92 (Mean=2.81, SD=0.56). It seemed that users’ reported higher negative affect in the post test affect scale than in the pretest affect scale. Users reading three messages seemed to report similar online aggression scores (2.12, 2.10, and 2.11, Mean=2.11, SD=0.33). Among scores of post test negative affect, users with high cognitive distortion reading disagreement messages reported highest negative affect (Mean=2.92, SD=0.48) but users with low cognitive distortion reading direct aggression messages reported lowest negative affect (Mean=2.72, SD=0.71). Among online aggression scores, users with high cognitive distortion reading direct aggression message reported highest online aggression (Mean=2.26, SD=0.24) but users with low cognitive distortion reading direct aggression message reported lowest online aggression (Mean=1.92, SD=0.32). That is, users with low cognitive distortion reading direct aggression message reported lowest online aggression and negative affect protest. Zero-order correlation coefficients between aggression and negative affect scores (N=359) indicated that there were relationships between pretest and post test negative affect (r=0.75, p<.01), relationships between online aggression and pretest negative affect scores (r=0.19, p<.01), relationships between online aggression and post test negative affect scores (r=0.20, p<.01).

The three-way analysis of variance displayed that there was not a significant difference in aggression across interaction between three aggressive messages and Internet cognitive distortion (F=1.160, p>.05). There was not a significant difference in online aggression across users reading three messages (F=.044, p>.05). However, there

was a significant difference in online aggression across the Internet cognitive distortion ($F=76.222, p<.001$). The authors further compared online aggression scores for users with high/low Internet cognitive distortion. The descriptive statistics of variables and t-test results were presented on Table 4.

Table4. The comparison of online aggression means for high/low Internet cognitive distortion

	Cognitive distortion	Numbers	Means	SD	T Value
Online aggression	High	209	2.23	0.30	9.01***
	Low	150	1.95	0.29	
	sum	359	2.11	0.33	

* $p<.001$

The result displayed that users with high Internet cognitive distortion (Mean=2.23, SD=0.30) reported higher online aggression ($T=9.01, p<.001$) than users with low Internet cognitive distortion (Mean=1.95, SD=0.29). The mix design three-way analysis of variance displayed that there was not a significant difference in twice negative affect across interaction among the aggressive messages, Internet cognitive distortion. ($F=.064, p>.05$). However, the twice negative affects (measurement timing) were different significantly ($F=640.923, p<.001$). Moreover, there was a significant difference in negative affect across the group high and low cognitive distortion ($F=76.222, p<.05$).

CONCLUSION AND DISCUSSION

This study investigated the effects of online discussion forum messages and Internet cognitive distortion on negative affect and aggression. The results of Study 1 yielded that the reported disgust means of three messages were lower than the midpoint; the reported hostility means of three aggressive messages were higher than the midpoint. In the research procedure, the participants were induced to involve themselves in the aggressive messages conducted by authors, so they can perceive the hostility of messages per se. However, as bystanders of those aggressive messages, their disgust feelings were little aroused. The relationship between hostility and disgust further yielded users' hostility and disgust feelings were aroused simultaneously. Three messages conducted by the authors could be classified by users into three levels: direct aggression, indirect aggression, and disagreement. The classification was similar to the flaming strength of Thompsen and Foulter (1996), and the aggression levels of Buss (1961), Bjiirkqvist, Osterman, and Lagerspetz (1992). The results revealed that users reading direct aggression messages than users reading disagreement messages reported higher hostility and disgust levels. This evidence corresponded to the assertion of online aggression strength of Thompsen and Foulter (1996), and that the phase profane antagonism (similar to direct aggressive) was more aggressive than the phase disagreement. Since the online discussion forum was not a face-to-face situation, the online aggression behaviors were only presented by verbal information or other limited means. In this case, the hostility and disgust feeling between direct and indirect aggression messages were too similar to make their differentiation.

The results of Study 2 indicated the descriptive statistics of pretest negative affect, post test negative affect scores and online aggression scores did not exceeded the midpoints of the scales. It seemed that users' negative affect and online aggression were little evoked. The possible explanation is that users' did not involve in the messages. As a bystander of messages, their negative affect and aggression were hard to be aroused. There was no interaction between messages and Internet cognitive distortion in aggression. There was not a significant difference in aggression after participants read three messages as well. Users with high Internet cognitive distortion than low Internet cognitive distortion reported significantly higher online aggression. The results suggested that although the messages may contain various extents of verbal aggression, they could not trigger bystander users' aggression. However, users with high Internet cognitive distortion tend to be aggressive on the Internet without reading messages. The results accorded with previous researcher's results that cognitive distortions would increase people's aggression (Crick & Dodge, 1994; Berkowitz, 1993). Looking back to our previous findings, the participants could recognize the hostility and disgust feelings from the three aggressive messages, and only the Internet cognitive distortion had impact on aggression. Accordingly, most users, bystanders, had rational views on the messages, but users with high Internet cognitive distortions tend to behavior more aggressively online than other users without messages evoked.

Moreover, there was no interaction between messages and Internet cognitive distortion in twice negative affect. There was a significant difference in twice negative affect scores. There was also a significant difference in twice negative affect across the Internet cognitive distortion. The results explained that participants' negative affect was evoked by the treatment. The negative affect of Internet cognitive distortion was influenced by times. Accordingly, the messages could not arouse BBS users' negative affect to change, but the twice negative affect between group high/ low cognitive distortion change. The result is the assertion of theories of Crick and Dodge

(1994), and Lazarus and Lazarus (1994), indicating that cognitive distortions were untruthful, false attitudes and dogmatic, radical thinking. The Internet cognitive distortion evoked one's negative affect.

In Conclusion, the results indicate that the aggressive messages could not arouse online aggression and negative affect. In addition, although online discussion forum users could classify the messages and their negative be aroused during the treatment, they did not become aggressive after reading the message. However, users with high Internet cognitive distortion behaved aggressively and negative affect aroused violently without reading messages. As a result, the results confirm that although aggressive messages are phenomenal on online discussion forum, the arousal of users' negative affect and aggression are limited. Users' psychological state (e.g., mood) and trait (e.g., personality or cognitive distortion) deserve to further investigate, because they may have more effects on user' behaviors.

At last, the authors suggested that some limitations of the messages failing to significantly evoke user' negative and online aggression. According to Berkowitz (1993) and Buss (1961), aggression was both active and passive. The aggressive messages conducted by the authors were not users' active behaviors. They were bystanders, hard to involve in the aggressive messages, passive to read the messages, and had no target to aggress or submit feedbacks. In addition, they were bystanders and not threatened to reactive. Although the users' negative affect were aroused after the treatment, their aggression was hard to trigger. Users' with high Internet cognitive distortion had extreme character and intended to aggress without reasons, and for them, our aggressive messages was nothing. The future study could investigate further follow the results.

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